

What is claimed is:

1. In a method for forming a pattern onto an article during an injection molding thereof, comprising the steps of:

feeding a pattern-bearing film to a molding position where a male mold and a female mold are opposed;

heating said pattern-bearing film by a heating board so as to soften it, said heating board having a heating surface and being movable into and away from a space between said male mold and said female mold;

transferring said pattern-bearing film to an internal surface of said female mold so as to contact said pattern-bearing film with said internal surface;

causing said male mold and said female mold with said pattern-bearing film therein to approach each other to form a closed molding cavity; and

injecting a molten resin into said cavity to form a molded article to adhere said pattern-bearing film to the surface of said article,

the improvement comprising the step of:

feeding the pattern-bearing film from a film supplying section to a position which is opposed to the internal surface of the female mold;

fixing a distal end of the pattern-bearing film by a film fixing frame arranged at a downstream-side of the female mold along the film feeding direction;

retreating the pattern-bearing film to the film supplying section so as to tighten up the pattern-bearing film; and

fixing the pattern-bearing film on the parting surface of the female mold, whereby the heating board is moved into a position where the heating surface thereof is opposed to the pattern-bearing film fixed on the parting surface, and then the pattern-bearing film is softened by the heating surface of the heating board means.

2. In an apparatus for forming a pattern onto an article during an injection molding thereof, comprising:

means for feeding a pattern-bearing film to a molding position where a male mold and a female mold are opposed;

heating board means for heating said pattern-bearing film so as to soften it, said heating board means having a heating surface and being movable into and away from a space between said male mold and said female mold;

means for transferring said pattern-bearing film to an internal surface of said female mold so as to contact said pattern-bearing film with said internal surface;

means for causing said male mold and said female mold with said pattern-bearing film therein to approach each other to form a closed molding cavity; and

resin injecting means for injecting a molten resin into said cavity to form a molded article to adhere said pattern-bearing film to the surface of said article,

the improvement comprising:

a film suppressing frame for fixing said peripheral portion of said pattern-bearing film which has fed by said feed means;

fitting groove means, defined on the periphery of a parting surface of said female mold, for holding the film suppressing frame; and

a sliding rod, slidably supported within a through-hole formed in the female mold and extended through the parting surface thereof, for moving the film suppressing frame so that the film suppressing frame is pressed into the fitting groove means with the pattern-bearing film interposed therebetween, whereby the heating board is moved into a position where the heating surface thereof is opposed to the pattern-bearing film fixed on the parting surface, and then the pattern-bearing film is softened by the heating surface of the heating board means.

3. In an apparatus for forming a pattern onto an article

during an injection molding thereof, comprising:

means for feeding a pattern-bearing film to a molding position where a male mold and a female mold are opposed;

heating board means for heating said pattern-bearing film so as to soften it, said heating board means having a heating surface and being movable into and away from a space between said male mold and said female mold;

means for transferring said pattern-bearing film to an internal surface of said female mold so as to contact said pattern-bearing film with said internal surface;

means for causing said male mold and said female mold with said pattern-bearing film therein to approach each other to form a closed molding cavity; and

resin injecting means for injecting a molten resin into said cavity to form a molded article to adhere said pattern-bearing film to the surface of said article,

~~the improvement comprising:~~

a pair of holding members, arranged on both sides of the female mold, for holding the heating board means so as to be opposed to the parting surface of the female mold; the holding members being movable along a direction connecting the male and female molds so as to press the heating board means to the female mold.

4. In an apparatus for forming a pattern onto an article during an injection molding thereof, comprising:

means for feeding a pattern-bearing film to a molding position where a male mold and a female mold are opposed;

heating board means for heating said pattern-bearing film so as to soften it, said heating board means having a heating surface and being movable into and away from a space between said male mold and said female mold;

means for transferring said pattern-bearing film to an internal surface of said female mold so as to contact said pattern-bearing film with said internal surface;

means for causing said male mold and said female mold

with said pattern-bearing film therein to approach each other to form a closed molding cavity; and

resin injecting means for injecting a molten resin into said cavity to form a molded article to adhere said pattern-bearing film to the surface of said article,

the improvement wherein

said heating board means is divided into a plurality of blocks, and each block independently controlling the amount of the heat generated by the block.

5. In an apparatus for forming a pattern onto an article during an injection molding thereof, comprising:

means for feeding a pattern-bearing film to a molding position where a male mold and a female mold are opposed;

heating board means for heating said pattern-bearing film so as to soften it, said heating board means having a heating surface and being movable into and away from a space between said male mold and said female mold;

means for transferring said pattern-bearing film to an internal surface of said female mold so as to contact said pattern-bearing film with said internal surface;

means for causing said male mold and said female mold with said pattern-bearing film therein to approach each other to form a closed molding cavity; and

resin injecting means for injecting a molten resin into said cavity to form a molded article to adhere said pattern-bearing film to the surface of said article,

the improvement comprising:

insulation board means for covering the entire heating surface of the heating board means when the heating board means is waiting at a standby position defined apart from the space between the male and female molds.

6. In an apparatus for forming a pattern onto an article during an injection molding thereof, comprising:

means for feeding a pattern-bearing film to a molding

position where a male mold and a female mold are opposed; heating board means for heating said pattern-bearing film so as to soften it, said heating board means having a heating surface and being movable into and away from a space between said male mold and said female mold; means for transferring said pattern-bearing film to an internal surface of said female mold so as to contact said pattern-bearing film with said internal surface; means for causing said male mold and said female mold with said pattern-bearing film therein to approach each other to form a closed molding cavity; and resin injecting means for injecting a molten resin into said cavity to form a molded article to adhere said pattern-bearing film to the surface of said article, the improvement comprising: heating wire means, arranged at the upstream-side of the female mold along the film feeding direction, for heating the pattern-bearing film so as to cut it into a proceeding portion and a following portion thereof when the heating board means is pressed into the parting surface of the female mold.

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